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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/002,549 | 11/02/2001 | Masahiko Hirose | 04558.035002 | 5660 |

22511 7590 05/20/2003

ROSENTHAL & OSHA L.L.P.
1221 MCKINNEY AVENUE
SUITE 2800
HOUSTON, TX 77010

EXAMINER

SORKIN, DAVID L

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1723

DATE MAILED: 05/20/2003

16

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/002,549

Applicant(s)

HIROSE, MASAHIKO

Examiner

David L. Sorkin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/452,731.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 4-6 rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (US 4,353,802).
3. Claims 1 and 4-6 are product-by-process claims. It is noted that "The Patent Office bears a lesser burden of proof in making a case of *prima facie* obviousness for product-by-process claims because of their peculiar nature" *In re Fessmann*, 180 USPQ 324, 326 (CCPA 1974).
4. Regarding claims 1 and 6, Hara ('802) discloses a permeable composite reverse osmosis membrane comprising a thin film containing an amino group directly bonded to an aromatic ring (see aniline and derivatives thereof listed under "(1) Monoamines" below col. 10; the compounds listed under "(4) Aromatic polyamines" in col. 11; and formula II-c where "A₅ represents ... a "phenyl group" as explained in col. 13, lines 7-20) and a microporous structure to support the thin film (see abstract, lines 1-3); wherein the thin film is formed through an interfacial polymerization reaction (see col. 27, lines 54-58) by reacting a polyvinyl alcohol based amine compound having at least two amino groups (see col. 4, line 33 to col. 10, line 22, especially formula I; Formula VIII; col. 22 lines 37 to col. 23 line 4; col. 26, lines 14-15; and col. 40, lines 32-65) with at least one

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substantially monomeric compound having at least two groups that react with the at least two amino groups on the polyvinyl alcohol based amine compound (see col. 29 line 21 to col. 30 line 19). Testing under the conditions stipulated in claim 1 and 6 is not discussed by the reference. It is considered that it would have been obvious to one of ordinary skill in the art to have made the membrane of Hara ('802) have the claim salt rejection and flux properties for the following reason: Throughout the reference Hara ('802) discusses how to vary the salt rejection and flux properties of the membrane to be lesser or greater (see for example col. 13, lines 33-37; col. 27 lines 6-18; col. 28, lines 2-6; and col. 32, lines 30-36). As held in *In re Aller*, 105 USPQ 233,235 (CCPA 1955), "where the general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation". See also *In re Preda*, 159 USPQ 342, 344 (CCPA 1968). Regarding claim 4, the substantially monomeric compound is an acid chloride (see col. 29 line 21 to col. 30 line 19). Regarding claim 5, the substantially monomeric compound is at least one polyfunctional acid halide compound selected from the group consisting of aromatic, aliphatic, and alicyclic polyfunctional acid halide compounds (see col. 28 line 26 to col. 32 line 29).

5. Claims 1 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (US 4,353,802) in view of Hirose et al. (US 5,576,057). While it is considered that the subject matter claims 1 and 4-6 would have been obvious to one of ordinary skill over Hara ('802) taken alone as discussed above, the teachings of Hirose ('057) make the obviousness of selecting a particular salt rejection and flux, such as a

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salt rejection of less than 80% and flux of $> 1.0 \text{ cm}^3/\text{m}^2\cdot\text{d}$, all-the-more apparent. Hirsoe ('057) explains that by varying proportions of water and ethanol in an amine solution, salt rejection and flux may be varied. See Table I where a salt rejection of 10% and flux of $41 \text{ m}^3/\text{m}^2\cdot\text{d}$ is disclosed.

Response to Arguments

6. Applicant states that "the present invention (as claimed) requires a permeable flux of $1 \text{ m}^3/\text{m}^2\cdot\text{d}$ "; however, this statement is inaccurate. Firstly, only dependent claim 6 makes any flux requirement. Secondly, claim 6 only requires a flux of " $1.0 \text{ cm}^3/\text{m}^2\cdot\text{d}$ ", a factor of one million (1,000,000) less than the value applicant uses in applicant's arguments. Whereas applicant states "the present invention has in excess of three times the maximum performance disclosed in Hara", applicant should instead realize that the performance of the membranes of Hara is several orders of magnitude superior to the minimum required by claim 6.

7. Hara ('802) discloses an amino group directly bonded to an aromatic ring (see aniline and derivatives thereof listed under "(1) Monoamines" below col. 10; the compounds listed under "(4) Aromatic polyamines" in col. 11; and formula II-c where " A_5 " represents ... a "phenyl group" as explained in col. 13, lines 7-20).

8. The thin film of Hara ('802) is formed through an interfacial polymerization reaction (see col. 27, lines 54-58).

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 703-308-1121. The examiner can normally be reached on 8:00 -5:30 Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

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David Sorkin

David Sorkin

May 16, 2003

W. L. Walker

W. L. WALKER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700